

Applicant : John S. Blanchard  
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Amendments to the Claims:

A complete listing of the claims, including Claims 123, 126, 127, 128 and 133 as currently amended and Claim 132 and 134 as currently canceled, is set forth below:

1-122. (Canceled).

123. (Currently Amended) A method of identifying an acetyltransferase substrate in a sample, the method comprising the steps of:

(a) contacting the sample with

(i) a reagent comprising ~~a thiol-containing compound~~ an aminoethanethiol,  
a halo-acetyl-CoA or a halo-acetyl-pantetheine, and

(ii) an acetyltransferase,

under conditions suitable for acetyltransferase enzyme activity, and

(b) identifying a substrate that has formed a base-stable covalent bond to the reagent, wherein the reagent is labeled with a label and/or the acetyltransferase is labeled with an affinity tag, and the substrate is the acetyltransferase substrate.

124. (Previously Presented) The method of claim 123, wherein the reagent is the halo-acetyl-CoA labeled with a label.

125. (Previously Presented) The method of claim 123, wherein the reagent is the halo-acetyl-pantetheine labeled with a label.

126. (Currently Amended) The method of claim 123, wherein the reagent is the aminoethanethiol ~~thiol-containing compound~~ labeled with a label.

127. (Currently Amended) The method of claim 123, wherein the reagent comprises the halo-acetyl-CoA and the aminoethanethiol ~~thiol-containing compound~~, wherein either the halo-acetyl-CoA or the aminoethanethiol ~~thiol-containing compound~~ is labeled with a label.

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128. (Currently Amended) The method of claim 123, wherein the reagent comprises the halo-pantetheine CoA and the aminoethanethiol ~~thiol-containing compound~~, wherein either the halo-acetyl-CoA or the aminoethanethiol ~~thiol-containing compound~~ is labeled with a label.

129. (Previously Presented) The method of claim 124, wherein the halo-acetyl-CoA is a chloroacetyl-CoA.

130. (Previously Presented) The method of claim 124, wherein the halo-acetyl-CoA is a bromoacetyl-CoA.

131. (Previously Presented) The method of claim 124, wherein the halo-acetyl-CoA is a fluoroacetyl-CoA or an iodoacetyl-CoA.

132. (Canceled)

133. (Currently Amended) The method of claim 126, wherein the aminoethanethiol ~~thiol-containing compound~~ is labeled with a fluorophore.

134. (Canceled)

135. (Previously Presented) The method of claim 123, wherein the label is radioactive.

136. (Previously Presented) The method of claim 135, wherein the radioactive label is <sup>32</sup>P.

137. (Previously Presented) The method of claim 123, wherein the label is fluorescent.

138. (Previously Presented) The method of claim 123, wherein the label is an affinity label.

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139. (Previously Presented) The method of claim 138, wherein the affinity label is biotin.

140. (Previously Presented) The method of claim 123, wherein the acetyltransferase is labeled with an affinity tag.

141. (Previously Presented) The method of claim 140, wherein the affinity tag is an oligo-His tag.

142. (Previously Presented) The method of claim 123, wherein the acetyltransferase is selected from the group consisting of a histone acetyltransferase, an N-terminal acetyltransferase, an arylamine N-acetyltransferase, an aminoglycoside acetyltransferase, chloramphenicol acetyltransferase, choline acetyltransferase, carnitine acetyltransferase, spermine acetyltransferase, and ornithine acetyltransferase.